CONFIRMATORY LICENSE
(Nonprofit Employee/Inventor)

Title: Remote Information Service Access System Based On A Client-Server-Service Model.
Inventor(s): Allan M. Konrad
Serial No.: 08/001,982 Filing Date (U.S.): 08 January 1993
Contractor: University of California
DOE Contract No.: DE-AC03-76SF00098
Foreign Applications filed in or intended to be filed at Inventor's expense in (countries): None at present. Countries to be determined.
DOE Case S-73,985 (RL-11508) (IB-880)

The Contractor, a nonprofit organization having the right to retain title to Subject Inventions as a result of Public Law 96-157, has reported the above-identified invention as a Subject Invention to DOE with its determination not to retain rights thereto. The inventor has requested and been granted the right to retain title to the invention by DOE based on the inventor's status as an employee of Contractor, agreement by the Contractor to the inventor's request to retain rights and agreement by the inventor to accept the provisions of 35 U.S.C. 202-204 as a condition of his retaining title.

Accordingly, this document is confirmatory of the nonexclusive, non-transferable, irrevocable, a paid-up license in this invention, patent application and any resulting patent and of all other rights acquired by the Government in accordance with the provisions of 35 U.S.C. 202-204, a copy of which is attached hereto and incorporated by reference herein. It is understood and agreed that this license does not preclude the Government from asserting rights under the provisions of the above-identified contract or of any other agreement between the Government and the Contractor, or from asserting any other rights of the Government with respect to the above-identified invention.

The Government is hereby granted an irrevocable power to inspect and make copies of the above-identified patent application.

Signed this 2nd day of March, 1993.

Allan M. Konrad
(Inventor)

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P.O. Box 4023
Berkeley, CA 94704
(Address)

IB-880

Patent Department
Lawrence Berkeley Laboratory
University of California

Proprietary Information

DISCLOSURE AND RECORD OF INVENTION FORM

Note: When completed, this Disclosure and Record of Invention Form is an important legal document. Care should be taken in its preparation. Please refer to accompanying instruction. If you desire assistance, call the LBL Patent Department (486-6503). Information contained in this document is maintained in confidence by the LBL Patent Department and normally will not be released to others except with attorney-client privilege, to research sponsors as required by contract, or under appropriate secrecy agreements. The information contained should not be disclosed to others outside the University, except as described in section 9, without the approval of the University Patent Office.

. . . . . .

INVENTORS

1. a) Allan M. Konrad
Name

b) _____
Name

c) _____
Name

d) _____
Name

original

TITLE

2. Please provide a short descriptive title of the invention.

LBL Remote Database Object

ABSTRACT

3. A. Briefly summarize the invention here. Include the novel features and advantages.

Please see Item "A" attached.

ITEM "A"

Abstract

The Remote Database Object Project, an early step in the *Phased Vision for a Seamless Information Environment*, has resulted in development and an initial implementation of a model to mitigate the obstacles to using remote databases encountered by Knowledge-and-Information Seekers on account of primitive computing resources. The objective in this phase of the Seamless Information Environment is to enable the Knowledge-and-Information Seeker at a workstation to "clicka mouse, getta service", specifically, database service, from an authoritative, well-maintained source. Such a source is likely to be remote, implying obstacles to access on account of networks, query languages, operating systems, and other computing primitives. The Remote Database Object accomplishes this task first by distinguishing among the services (database service, network connection service, and display service), then imposing the client-server-service model upon each service, resulting in a model where the Display Client and Database Server are one and the same program. The result provides the illusion to the Knowledge-and-Information Seeker that the remote database resides locally on the workstation, implying ease of use, yet the advantages of using well-maintained authoritative data are gained.

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DESCRIPTION

B. Please provide a detailed description of the invention using additional sheets as necessary and attach as appendix.

FUNDING INFORMATION

4. Please list the funding source(s) for the project under which this invention was made. If applicable, identify by contract or grant number and the name of a contact of the funding agency.

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DOE	DE-AC03-76F00098	

DATES AND PLACES OF THE INVENTION

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Summer, 1988

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October 1988. LBLID-1503 "The LBL Database Object Project"
TID has a copy.

7. When did you first successfully test this invention?

26 September 1990 11:18 a.m.

DISCLOSURE TO OTHERS

8. If you have disclosed this invention to non-UC personnel (including research sponsor) then indicate when, under what circumstances, and to whom.

(a) orally

SPIRES COonsortium staff and members, to gain technical assistance,

28 March 1990, Stanford University, Stanford, CA. and over the telephone since,

(b) writing

none.

(c) by actual use, demonstration, or posters

none.

PUBLICATION

9. Have you submitted or do you plan to submit a report, abstract, paper or thesis describing this invention for publication, for presentation at a conference, or to a research sponsor? yes.

If yes, give details, including the actual or planned date of submission. If a manuscript has been accepted, give the anticipated publication date. Append a copy of the latest draft manuscript available. (See instructions for the effect of publication prior to the filing of a patent application.)

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PRIOR ART

10. Please identify any references, patent, patent applications, or other publications of which you are aware and which you believe to be pertinent to this invention. Please attach a copy of each of these references, if available.

X11 (X Windows) MIT

SPIRES, Stanford University

LICENSING INFORMATION

11. If, in the development of this invention, you used any proprietary material (e.g., cell line, antibody, plasmid, computer software, or chemical compound obtained from outside your laboratory under a restrictive written or oral transfer agreement) please attach a copy or summary of that agreement.

LBL is licensed to use the SPIRES database management system.
LBL is licensed to use the Sun Unix operating system.
LBL is licensed to use eXodous X11 server product.
LBL is licensed for Internet Protocol products from Apple, Sun.
LBL is licensed for use of X11 software (MIT) through vendors.

12. List companies you believe might be interested in using, developing or marketing this invention.

Lockheed (Dialog)
Bibliographic Retrieval Service
Dow Jones
Bell Telephone directory subsidiaries
Commercial database vendors, such as Mead Data.

INVENTION DATA

13. Signatures, Names and Addresses of Inventors

Note: If there are more inventors please provide signatures, names and addresses on an additional sheet of paper

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Allan M. Konrad 03 Oct 90
Signature Date

b)

Name

Title/Position

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Signature Date

CORROBORATION

14. Technically Qualified Witnesses (Two Required)
The foregoing invention was disclosed to and understood by me:

a) [signature] 9-3-90
Signature Date

D. F. Stevens
Print Name

b) Stewart C. Loken 30 Oct 90
Signature Date

Stewart C. Loken
Print Name

Submit this form with ORIGINAL SIGNATURES directly to:

Manager, Patent Department
Lawrence Berkeley Laboratory
One Cyclotron Road
Bldg. 50A Rm. 6140
Berkeley, CA 94720

If you do not receive an acknowledgement within 30 days, please call the LBL Patent Office 486-7058.

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LBL-29104

The Remote Database Object Project at Lawrence Berkeley Laboratory

To Be Submitted for publication to Information Processing and Management
01 October 1990

Allan M. Konrad
Information Planning and Services
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This work was supported by the Office of Energy Research, U.S. Department of Energy under Contract DE-AC03-76SF00098

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Globally distributed resources appear to reside on a single familiar environment: Knowledge-and-Information Seeker's workstation.

Self-evident use:

Encourages confidence.

Consistent "look and feel" for consistency, leading to ease of use.

A strong sense of "home screen" and easy to return there. You don't get lost in all the windows.

Virtually no training required. Knowledge-and-Information Seeker need NOT learn to use or use command-oriented database query language.

Learning curve is both virtually flat, and remains low. Does enable the Knowledge-and-Information Seeker to increase their productivity rapidly.

Applications system (database management system) becomes transparent. Self-evident graphic commands are used rather than textual command language. All buttons are labeled with descriptive labels that Knowledge-and-Information Seekers can understand, rather than with terse or arcane commands. The Knowledge-and-Information Seeker can select from (fixed display or popup) menus phrases rather than commands that are more descriptive of the result that they want rather than the task they want to perform, so that they dont have to know what the task is that they want to perform. Consistent self-evident icon-oriented full-screen presentation displays reduce training needs and encourage confidence when using several databases. Intuitive.

System is intuitive and error-self-resolving. Inexperienced Knowledge-and-Information Seekers need not use error messages to determine a course of action or pursue it.

Facilitate easier use for more experienced Knowledge-and-Information Seekers by enabling them to tailor/edit queries or instructions to database service.

Browsing and searching are easy.

Can provide any retrieval or other capability provided by the backend database management system, including identifying (browsing), locating, and fetching.

Data not stored in appropriate logical or physical format (i.e., physical format serves as logical format) are easier to retrieve because the DisplayClient/DatabaseServer Program performs the database retrival manipulations on behalf of the Knowledge-and-Information Seeker. The Knowledge-and-Information Seeker need not understand nor know how to use the conceptual, logical, nor storage architecture of the database.

"help" and other explanations, cast in the form of database records that can be stored and retrieved in an organized way by the database service can be displayed if the database service provides it.

"help" from human who can see session not available. Remote Database Object operator can connect to console of the DisplayClient/DatabaseServer Program to provide assistance.

Knowledge-and-Information Seeker need NOT know a network address of the database host. Network addressing becomes transparent

Knowledge-and-Information Seeker need NOT know how to use the network address of the database host. Network navigation becomes transparent

Knowledge-and-Information Seeker does NOT need a log on account on the database host.

The Knowledge-and-Information Seeker does NOT need a password for the database host.

The Knowledge-and-Information Seeker is NOT compelled to log onto the database host merely to renew a password.

The Knowledge-and-Information Seeker does NOT log onto the database host at all.

Yet the advantages of a log on session are provided vicariously though a server.

Session context supported so that query can be refined iteratively (by virtue of having transparent logon session).

The Knowledge-and-Information Seeker need **NOT** travel to an inconvenient location to use a special terminal.

Knowledge-and-Information Seeker does **NOT** need knowledge of operating system issues on the database host

(Do I have enough memory? Do I have access to the right disks? etc.) Operating system becomes transparent

The Knowledge-and-Information Seeker need **NOT** learn a different editor than that on their workstation.

Vendor-independence:

Knowledge-and-Information Seeker need **NOT** be concerned about the brand name of the remote service host computer

Knowledge-and-Information Seeker need **NOT** be concerned about the brand name of their workstation or terminal type emulation or style of cursor addressing.

Use of any particular brand of workstation or host does **NOT** preclude use of workstations manufactured by other vendors. They need only support IP network connectivity and an X11 display server.

Minimal database-specific software required on the workstation. The search and retrieval interface does not reside on the workstation, resulting in several advantages:

Less memory, disk, and other hardware requirements of the Knowledge-and-Information Seeker's workstation

No software need be updated or replaced when the interface is improved or revised by the maintainers. Maintenace of software on the workstation virtually disappears, except for new operating systems and display server software: Even as the interface is modified and enhanced, not software maintenance is required by the Workstation owner because display services are provided by the remote host, and display service modifications are accomplished by the database owner on software residing only on the database host.

Less expensive because only minimal application specific software need be obtained.

Makes most efficient use of compute resources: workstation to do display and selective downloading, database service host to perform database services and compute-intensive display client computation. But does provide downloading.

Knowledge-and-Information Seeker need **NOT** license application-specific software, thus licensing becomes easier

Access is **fast.**

Instantenous delivery, once byte-based elecutio added to the database, just like instantaneous delivery of a voice on a telephone. No delay for publication and distribution of media as with books or CD-ROMs. Data are available the instant they are published by adding them to the database.

Can take advantage of large mainframe (remote database service host) processing capacity for speed and throughput.

No practical limits on simultaneous access.

No need to wait for available CD-ROM, CD-ROM reader, or book to be returned to library. Requesters have the illusion of an infinite number of copies available.

Reduced likelihood that increased use of database and network services by Knowledge-and-Information Seekers with marginal priority will saturate the infrastructure, causing them to be disallowed access.

Available 24 hours a day, 7 days a week, so long as the database and network are operating. Doesn't close or have limited hours like a library or some CD-ROM facilities.

Display **NOT** confined to 80- or 132-column or 23-line screen

Display NOT confined to alphanumeric characters:

Database Records containing Still and video images can be retrieved and displayed

Database Records containing sound can be retrieved and displayed

Knowledge-and-Information Seeker need NOT be concerned about configuring telecommunications aspects of a terminal or modem (e.g., parity, duplex, stop bits, etc.)

Provides advanced capabilities without interfering with or preventing the use of a dumb terminal usage or other style of usage presently "in production".

The keys on the Knowledge-and-Information Seeker's workstation keyboard retains the same meanings to which they are accustomed. No awkward "three-finger salutes".

Knowledge-and-Information Seeker can see search result size without having to examine the content of the search result.

Knowledge-and-Information Seeker can specify their own sort or sequence of database search result.

Knowledge-and-Information Seekers need not know how data are stored in order to retrieve (identify, locate, or fetch) them.

Data are Accurate:

Authoritative (implying well-maintained) data, rather than a copy (read-only or update, as specified by the database owner)

Complete

Current

Correct

Affordable:

No special equipment (beyond workstation and network connection, less than $2,000), virtually no learning cost, virtualy no software maintenance cost, no licensing cost.

Reduced cost means increased competitiveness.

Secure

Access challenged at the *database* layer only, rather than also at the operating system layer. If the database is intended to be entirely publicly accessible, then no security challenge is encountered by the Knowledge-and-Information Seeker at all. Security challenges at the operating system layer become superfluous.

Access controlled or controllable by database owner just as with any other user of the database. Additional security may be implemented by evaluating the network address of the requester.

Since the Knowledge-and-Information Seeker does not logon to the remote database host, consequently does not have access to its operating system. Thus, those who are also mischievious hackers are less able to find dormant logon accounts and use them to rummage around in storage or have access to the full power of an operating system.

The DisplayClient/DatabaseServer Program and Connection Manager can refuse or ignore any commands as appropriate. Additionally, the full security resources of the database management system are in play, just as they are for any logged-on user of the database service host. Thus, those who are also mischievious hackers are less able to accomplish database-specific damage.

Security need not be a reason to prevent or make difficult, use of services to those who may have access to them.

Reduces congestion on the network caused by downloading unneeded data from a search result, or entire databases

Search results easily conveyed to workstation.

Character and format language of data does not interfere with services on the Information-and-Knowledge Seeker's workstation. unlike CD-ROM format language and workstation.

"seam" between source device and Information-and-Knowledge Seeker's workstation vanishes, unlike the seam between CD-ROM reader and workstation.

Remote databases are administratively available, by virtue of obtaining a STARTER icon.

Information-and-Knowledge Seeker gains benefits of reduced control over their style of work from institutions and administrators of primitive computing resources:

Fewer interactions with institutional entities, time saved, reduced cost.

Fewer barriers to participation and use of resources caused solely by bureaucratic entities.

Reduced likelihood of barriers to access on account of administrative inertia.

Increases compliance with institutional policies and mandates (e.g., within the Department of Energy) to maximize efficiency in use of computing and information resources.

Fewer database-based applications need to be reinvented.

Relieves the Database Service from having to provide windowing and display services.

Participation by those who might not otherwise have access.

Resources are scarce even for those who do have access.

Increases the pool of researchers able to work on a problem.

Probable:

Database Records containing Color can be retrieved and displayed

Components of compound document remain logically bound together in the database, causing them to be delivered together, retaining coherence. E.g., Video, images, sound, delivered as part of a database record.

Database can interoperate with other services
(e.g., spreadsheet or images services) without Knowledge-and-Information Seeker intervention.

Knowledge-and-Information Seeker can specify their own fonts.

Downloading search result content from database:

Search result contents can be saved, rather than just scrolling by on the screen.

Search result contents can be sent to the Knowledge-and-Information Seeker's workstation.

Search result contents can be sent to the Knowledge-and-Information Seeker's workstation easily just by clicking a button with a mouse. No file manipulation on the part of the Knowledge-and-Information Seeker required to accomplish movement between local workstation and remote database host.

Only the data that the Knowledge-and-Information Seeker wants to store on their workstation need be stored there.

The downloaded output can be named by the requester.

Can download search results such that they are compatible with the text editing environment on the workstation .

Can download search results from remote authoritative source to a local printer

Can download search results from remote authoritative source to spreadsheet on Knowledge-and-Information Seeker's workstation

Reliability:

Reliable, so long as the network, database host, workstation, and electric power utility are operating.

Administratively reliable because the Knowledge-and-Information Seeker's institution need perform no administrative work specific to any particular remote database to support it's accessibility.

Based on "reliable endpoint-to-endpoint" protocol (TCP/IP), rather than on store-and-forward, consequently there is little concern that transmission failed, or that it failed with no notice. Notice of failure is handled either at the transport layer (the packets are resent) or the DisplayClient/DatabaseServer Program can take appropriate action on behalf of the Knowledge-and-Information Seeker, transparently.

Mechanism provided to convey billing and charging, royalty, and resource usage to database if desired.

Can support "backend" technologies (agents, gateways, knowbots) to reduce the need for the Knowledge-and-Information Seeker to access each database directly, and eventually to get assistance from services at higher layers of the extended layerd model.

LBL-29104

The Remote Database Object Project at Lawrence Berkeley Laboratory

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Abstract

The Remote Database Object Project, an early step in the *Phased Vision for a Seamless Information Environment*, has resulted in development and an initial implementation of a model to mitigate the obstacles to using remote databases encountered by Knowledge-and-Information Seekers on account of primitive computing resources. The objective in this phase of the Seamless Information Environment is to enable the Knowledge-and-Information Seeker at a workstation to "clicka mouse, getta service", specifically, database service, from an authoritative, well-maintained source. Such a source is likely to be remote, implying obstacles to access on account of networks, query languages, operating systems, and other computing primitives. The Remote Database Object accomplishes this task first by distinguishing among the services (database service, network connection service, and display service), then imposing the client-server-service model upon each service, resulting in a model where the Display Client and Database Server are one and the same program. The result provides the illusion to the Knowledge-and-Information Seeker that the remote database resides locally on the workstation, implying ease of use, yet the advantages of using well-maintained authoritative data are gained.

The scenario for using the Remote Database Object is similar to other client-server objects: From a workstation, the Knowledge-and-Information Seeker submits a database inquiry (by clicking an icon on the workstation which then presents a window or menu for specifying a query). The inquiry is forwarded to the appropriate database running on its remote host which processes it against the specified database and returns the result to the requester, as if the database resided on the workstation. The requester need not know the internal format of the data, operating system commands, where the data are located, their network address, or the query language.

As do many applications, the Remote Database Object makes use of MIT's X11 XWindows program for display services. A significant difference in the use of X11 by the Remote Database Object however, is that it does not use Xterm to create log on session, but instead provides the advantages of a session by virtue of the DisplayClient/DatabaseServer Program issuing host language interface (HLI) calls directly to the database service. This approach means that minimal database-specific software is required to run on the workstation since the search and retrieval interface does not reside on the workstation, but on the host providing database services. Only the display server and a small "starter" program reside on the Knowledge-and-Information Seeker's workstation. This results in several advantages, including: less memory, disk, and other hardware requirements of the workstation; no database-specific software need be licensed, no software need be updated or replaced on the workstation when the interface is improved or revised by the maintainers; and efficient use of compute resources because workstations need only devote CPU capacity to processing displays and selective downloading, while the database service host performs the compute-intensive database service and display client tasks.

Globally distributed resources appear to reside on a single familiar environment: Knowledge-and-Information Seeker's workstation.

Self-evident use:

Encourages confidence.

Consistent "look and feel" for consistency, leading to ease of use.

A strong sense of "home screen" and easy to return there. You don't get lost in all the windows.

Virtually no training required. Knowledge-and-Information Seeker need NOT learn to use or use command-oriented database query language.

Learning curve is both virtually flat, and remains low. Does enable the Knowledge-and-Information Seeker to increase their productivity rapidly.

Applications system (database management system) becomes transparent. Self-evident graphic commands are used rather than textual command language. All buttons are labeled with descriptive labels that Knowledge-and-Information Seekers can understand, rather than with terse or arcane commands. The Knowledge-and-Information Seeker can select from (fixed display or popup) menus phrases rather than commands that are more descriptive of the result that they want rather than the task they want to perform, so that they dont have to know what the task is that they want to perform. Consistent self-evident icon-oriented full-screen presentation displays reduce training needs and encourage confidence when using several databases. Intuitive.

System is intuitive and error-self-resolving. Inexperienced Knowledge-and-Information Seekers need not use error messages to determine a course of action or pursue it.

Facilitate easier use for more experienced Knowledge-and-Information Seekers by enabling them to tailor/edit queries or instructions to database service.

Browsing and searching are easy.

Can provide any retrieval or other capability provided by the backend database management system, including identifying (browsing), locating, and fetching.

Data not stored in appropriate logical or physical format (i.e., physical format serves as logical format) are easier to retrieve because the DisplayClient/DatabaseServer Program performs the database retrival manipulations on behalf of the Knowledge-and-Information Seeker. The Knowledge-and-Information Seeker need not understand nor know how to use the conceptual, logical, nor storage architecture of the database.

"help" and other explanations, cast in the form of database records that can be stored and retrieved in an organized way by the database service can be displayed if the database service provides it.

"help" from human who can see session not available. Remote Database Object operator can connect to console of the DisplayClient/DatabaseServer Program to provide assistance.

Knowledge-and-Information Seeker need NOT know a network address of the database host. Network addressing becomes transparent

Knowledge-and-Information Seeker need NOT know how to use the network address of the database host. Network navigation becomes transparent

Knowledge-and-Information Seeker does NOT need a log on account on the database host.

The Knowledge-and-Information Seeker does NOT need a password for the database host.

The Knowledge-and-Information Seeker is NOT compelled to log onto the database host merely to renew a password.

The Knowledge-and-Information Seeker does NOT log onto the database host at all.

Yet the advantages of a log on session are provided vicariously though a server.

Session context supported so that query can be refined iteratively (by virtue of having transparent logon session).

The Knowledge-and-Information Seeker need NOT travel to an inconvenient location to use a special terminal.

Knowledge-and-Information Seeker does NOT need knowledge of operating system issues on the database host

(Do I have enough memory? Do I have access to the right disks? etc.) Operating system becomes transparent

The Knowledge-and-Information Seeker need NOT learn a different editor than that on their workstation.

Vendor-independence:

Knowledge-and-Information Seeker need NOT be concerned about the brand name of the remote service host computer

Knowledge-and-Information Seeker need NOT be concerned about the brand name of their workstation or terminal type emulation or style of cursor addressing.

Use of any particular brand of workstation or host does NOT preclude use of workstations manufactured by other vendors. They need only support IP network connectivity and an X11 display server.

Minimal database-specific software required on the workstation. The search and retrieval interface does not reside on the workstation, resulting in several advantages:

Less memory, disk, and other hardware requirements of the Knowledge-and-Information Seeker's workstation

No software need be updated or replaced when the interface is improved or revised by the maintainers. Maintenace of software on the workstation virtually disappears, except for new operating systems and display server software: Even as the interface is modified and enhanced, not software maintenance is required by the Workstation owner because display services are provided by the remote host, and display service modifications are accomplished by the database owner on software residing only on the database host.

Less expensive because only minimal application specific software need be obtained.

Makes most efficient use of compute resources: workstation to do display and selective downloading, database service host to perform database services and compute-intensive display client computation. But does provide downloading.

Knowledge-and-Information Seeker need NOT license application-specific software, thus licensing becomes easier

Access is fast.

Instantenous delivery, once byte-based elecutio added to the database, just like instantaneous delivery of a voice on a telephone. No delay for publication and distribution of media as with books or CD-ROMs. Data are available the instant they are published by adding them to the database.

Can take advantage of large mainframe (remote database service host) processing capacity for speed and throughput.

No practical limits on simultaneous access.

No need to wait for available CD-ROM, CD-ROM reader, or book to be returned to library. Requesters have the illusion of an infinite number of copies available.

Reduced likelihood that increased use of database and network services by Knowledge-and-Information Seekers with marginal priority will saturate the infrastructure, causing them to be disallowed access.

Available 24 hours a day, 7 days a week, so long as the database and network are operating. Doesn't close or have limited hours like a library or some CD-ROM facilities.

Display NOT confined to 80- or 132-column or 23-line screen

Display NOT confined to alphanumeric characters:

Database Records containing Still and video images can be retrieved and displayed

Database Records containing sound can be retrieved and displayed

Knowledge-and-Information Seeker need NOT be concerned about configuring telecommunications aspects of a terminal or modem (e.g., parity, duplex, stop bits, etc.)

Provides advanced capabilities without interfering with or preventing the use of a dumb terminal usage or other style of usage presently "in production".

The keys on the Knowledge-and-Information Seeker's workstation keyboard retains the same meanings to which they are accustomed. No awkward "three-finger salutes".

Knowledge-and-Information Seeker can see search result size without having to examine the content of the search result.

Knowledge-and-Information Seeker can specify their own sort or sequence of database search result.

Knowledge-and-Information Seekers need not know how data are stored in order to retrieve (identify, locate, or fetch) them.

Data are Accurate:

Authoritative (implying well-maintained) data, rather than a copy (read-only or update, as specified by the database owner)

Complete

Current

Correct

Affordable:

No special equipment (beyond workstation and network connection, less than $2,000), virtually no learning cost, virtualy no software maintenance cost, no licensing cost.

Reduced cost means increased competitiveness.

Secure

Access challenged at the *database* layer only, rather than also at the operating system layer. If the database is intended to be entirely publicly accessible, then no security challenge is encountered by the Knowledge-and-Information Seeker at all. Security challenges at the operating system layer become superfluous.

Access controlled or controllable by database owner just as with any other user of the database. Additional security may be implemented by evaluating the network address of the requester.

Since the Knowledge-and-Information Seeker does not logon to the remote database host, consequently does not have access to its operating system. Thus, those who are also mischievious hackers are less able to find dormant logon accounts and use them to rummage around in storage or have access to the full power of an operating system.

The DisplayClient/DatabaseServer Program and Connection Manager can refuse or ignore any commands as appropriate. Additionally, the full security resources of the database management system are in play, just as they are for any logged-on user of the database service host. Thus, those who are also mischievious hackers are less able to accomplish database-specific damage.

Security need not be a reason to prevent or make difficult, use of services to those who may have access to them.

Reduces congestion on the network caused by downloading unneeded data from a search result, or entire databases

Search results easily conveyed to workstation.

Character and format language of data does not interfere with services on the Information-and-Knowledge Seeker's workstation. unlike CD-ROM format language and workstation.

"seam" between source device and Information-and-Knowledge Seeker's workstation vanishes, unlike the seam between CD-ROM reader and workstation.

Remote databases are administratively available, by virtue of obtaining a STARTER icon.

Information-and-Knowledge Seeker gains benefits of reduced control over their style of work from institutions and administrators of primitive computing resources:

Fewer interactions with institutional entities, time saved, reduced cost.

Fewer barriers to participation and use of resources caused solely by bureaucratic entities.

Reduced likelihood of barriers to access on account of administrative inertia.

Increases compliance with institutional policies and mandates (e.g., within the Department of Energy) to maximize efficiency in use of computing and information resources.

Fewer database-based applications need to be reinvented.

Relieves the Database Service from having to provide windowing and display services.

Participation by those who might not otherwise have access.

Resources are scarce even for those who do have access.

Increases the pool of researchers able to work on a problem.

Probable:

Database Records containing Color can be retrieved and displayed

Components of compound document remain logically bound together in the database, causing them to be delivered together, retaining coherence. E.g., Video, images, sound, delivered as part of a database record.

Database can interoperate with other services
(e.g., spreadsheet or images services) without Knowledge-and-Information Seeker intervention.

Knowledge-and-Information Seeker can specify their own fonts.

Downloading search result content from database:

Search result contents can be saved, rather than just scrolling by on the screen.

Search result contents can be sent to the Knowledge-and-Information Seeker's workstation.

Search result contents can be sent to the Knowledge-and-Information Seeker's workstation easily just by clicking a button with a mouse. No file manipulation on the part of the Knowledge-and-Information Seeker required to accomplish movement between local workstation and remote database host.

Only the data that the Knowledge-and-Information Seeker wants to store on their workstation need be stored there.

The downloaded output can be named by the requester.

Can download search results such that they are compatible with the text editing environment on the workstation .

Can download search results from remote authoritative source to a local printer

Can download search results from remote authoritative source to spreadsheet on Knowledge-and-Information Seeker's workstation

Reliability:

Reliable, so long as the network, database host, workstation, and electric power utility are operating.

Administratively reliable because the Knowledge-and-Information Seeker's institution need perform no administrative work specific to any particular remote database to support it's accessibility.

Based on "reliable endpoint-to-endpoint" protocol (TCP/IP), rather than on store-and-forward, consequently there is little concern that transmission failed, or that it failed with no notice. Notice of failure is handled either at the transport layer (the packets are resent) or the DisplayClient/DatabaseServer Program can take appropriate action on behalf of the Knowledge-and-Information Seeker, transparently.

Mechanism provided to convey billing and charging, royalty, and resource usage to database if desired.

Can support "backend" technologies (agents, gateways, knowbots) to reduce the need for the Knowledge-and-Information Seeker to access each database directly, and eventually to get assistance from services at higher layers of the extended layerd model.

WAIVER ACTION - ABSTRACT

CONTRACT NO. DE-AC03-76SF00098

DOE WAIVER NO. W(I)-92-037 (SAN 609)

REQUESTER

ALAN M. KONRAD

(UNIVERSITY OF CALIFORNIA -
LBL)

CONTRACT SCOPE OF WORK

THE CONTRACT PROVIDES FOR OPERATION OF THE LBL GOCO FACILITY

RATIONALE OF DECISION

PETITIONER WILL FURTHER DEVELOP AND COMMERCIALIZE THE INVENTION ON PRIVATE TIME AND EXPENSE. THERE IS TO BE NO FURTHER GOVERNMENT OF THE INVENTION

DISPOSITION

FTS 451-

STEWARD C. LOKEN 7474

1- Funding primarily by overhead charged to funded research groups

2- No amount was budgeted or attributable to develop the subject invention (Remote Objects)

3. Who is the person to call for funding info about ~~the~~ SSCL funding of this invention

4- Who is the Hdqs DOE # Program person related to the ~~funding~~ invention

5- If there is going to be DOE further funding of the invention.

Overhead funding

Allan Konrad --- RL - 11,508
WAIVER # W(I) 92-037 - SAN-609

① Address part
Dear Mr. [illegible] -

②

(510) 486-5458

overhead account
Division Director:
Stuart [illegible]
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Will ask DOE for a Program Manager